

CLAIMS

What is claimed is:

1 1. A method for combining at least a portion of a plurality of images,
2 comprising the steps of:
3 obtaining a first image and a second image, wherein at least a portion of
4 said first image and said second image include a common field of view;
5 adjusting at least a portion of said first image to reduce an image disparity
6 between said common field of view of said first image and said second image; and,
7 combining at least a portion of said first image and at least a portion of said
8 second image subsequent to said step of adjusting.

1 2. The method of Claim 1, wherein said step of adjusting at least a
2 portion of said first image includes shifting said first image a first distance with
3 respect to said second image.

1 3. The method of Claim 1 wherein said step of adjusting includes the
2 steps of:
3 determining a plurality of disparity differences between at least a portion
4 of said first image and at least a portion of said second image, each disparity
5 difference corresponding to a distance of adjustment of said first image with
6 respect to said second image; and
7 selecting a distance corresponding to a lowest disparity difference in said
8 plurality of disparity differences as a first distance; and,

9 shifting said first image said first distance with respect to said second
10 image.

1 4. The method of Claim 1, further including the step of:
2 adjusting said second image to reduce said image disparity between said
3 common field of view of said first image and said second image.

1 5. The method of Claim 4, wherein said step of adjusting said second
2 image includes shifting said second image a second distance.

1 6. The method of Claim 5 wherein said second distance is a distance
2 where the image disparity is reduced.

1 7. The method of Claim 1 further including the step of:
2 warping said first image and said second image into a common coordinate
3 system of a composite image subsequent to said step of obtaining.

1 8. The method of Claim 1 further including the step of:
2 cross-fading said common field of view of said first image and said second
3 image, subsequent to said step of adjusting.

1 9. A method for combining frames of video from a plurality of
2 cameras arranged in a camera array, comprising the steps of:

3 obtaining a first frame from a first camera, and a second frame from a
4 second camera, wherein at least a portion of said first frame and said second frame
5 include a common field of view;
6 stretching at least a portion of said first frame to reduce an image disparity
7 between said common field of view of said first frame and said second frame; and,
8 combining said common field of view of said first frame and said second
9 frame subsequent to said step of stretching.

1 10. The method of Claim 9, wherein said step of stretching at least a
2 portion of said first frame includes stretching at least a portion of said first frame
3 a first distance.

1 11. The method of Claim 10 wherein said first distance is a distance
2 where disparity is reduced.

1 12. The method of Claim 9, further including the step of:
2 stretching said second frame to reduce said disparity between said common
3 field of view of said first frame and said second frame.

1 13. The method of Claim 12, wherein said step of stretching said second
2 frame includes stretching said second frame a second distance.

1 14. The method of Claim 9 wherein said step of stretching includes the
2 steps of:

3 determining a plurality of disparity differences between at least a portion
4 of said first frame and at least a portion of said second frame, each disparity
5 difference corresponding to a distance of stretching of said first frame and said
6 second frame; and

7 selecting a distance corresponding to a lowest disparity difference in said
8 plurality of disparity differences as a stretching distance; and,

9 stretching at least a portion of said first frame and said second frame such
10 that a total stretching of said first and second frames approximately equals said
11 stretching distance.

1 15. The method of Claim 9 further including the step of:

2 warping said first frame and said second frame into a common coordinate
3 system of a composite frame subsequent to said step of obtaining.

1 16. The method of Claim 9 further including the step of:

2 cross-fading said common field of view of said first frame and said second
3 frame, subsequent to said step of stretching.

1 17. A method for combining a plurality of images captured from a
2 plurality of cameras of a camera array into a panoramic image, comprising the steps
3 of:

4 adjusting a first portion of a first image to reduce image disparity between
5 said first portion of said first image and a second image;

6 adjusting a second portion of said first image to reduce image disparity
7 between said second portion of said first image and a third image; and,

8 combining said first image, said second image, and said third image into a
9 panoramic image.

1 18. The method of Claim 17 further including the step of:

2 warping said first image, said second image, and said third image into a
3 common coordinate system of a composite image subsequent to said step of
4 obtaining.

1 19. The method of Claim 17 further including the step of:

2 cross-fading said adjusted first portion of said first image with at least a
3 portion of said second image, and

4 cross-fading said adjusted second portion of said first image with at least
5 a portion of said third image.

1 20. The method of Claim 17 wherein said step of adjusting said first
2 portion of said first image includes stretching said first portion of said first image
3 a first distance; and

4 wherein said step of adjusting said second portion of said first image
5 includes stretching said second portion of said first image a second distance.

22. An apparatus for producing a panoramic video, comprising:

a camera array including a plurality of cameras;

an image obtaining device, wherein said image obtaining device obtains a first image from a first camera in said camera array and a second image from a second camera in said camera array, wherein said first image and said second image include a common field of view;

1 23. The apparatus of Claim 21, wherein said image adjustor adjusts at
2 least a portion of said first image by shifting said first image a first distance.

1 24. The apparatus of Claim 21, wherein said image adjustor adjusts at
2 least a portion of said first image by stretching said first image a first distance.